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AUGUST 1942



# SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

C. R. Enlow in this issue tells of erosion control on Army air bases—Arthur R. Hall digs into history for the record of American farmers in time of war—A Nebraska soil conservation district instructs its members on how they may help toward victory

UNITED STATES DEPARTMENT OF AGRICULTURE - WASHINGTON

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WELLINGTON BRINK  
EDITOR



# SOIL CONSERVATION

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## SCS HELPS U. S. ARMY HOLD THE LAND

BY C. R. ENLOW<sup>1</sup>

Regional Agronomist "Hipe" Morrish, back in December 1941 was in his office at Dayton, Ohio, trying to figure how to bring more agronomy into the soil conservation program. Today, Major R. H. Morrish is trying to get more soil conservation on more army posts. He is one and the same man; back of it is an interesting story of rapidly moving events.

Prior to December, the Soil Conservation Service had received many requests from the armed forces for assistance. All of the regions had furnished technical assistance and some planting material, and the Soil Conservation Service technicians had visited many army posts to advise on erosion control problems. The Washington office had handled a good many inquiries, referring them to the region. Chief Bennett was pleased that the Service could be of assistance with war activities and wrote to the War Department, advising that Service facilities were available to assist with erosion problems at cantonments, forts, arsenals and in fact all points where assistance was needed.

This letter was the beginning of real cooperation, as shortly after Lieutenant Colonel J. R. Pollock and J. L. Vincenz of the Quartermaster Corps suggested detailing Soil Conservation Service technicians to Corps Area Offices in order to make an immediate survey of erosion conditions on army units and develop erosion control plans with estimates of cost. This was done very quickly, and the plans were used as a basis by the Quartermaster Corps for the allocation of funds to put erosion control in effect. Hundreds of Soil Conservation Service technicians were requested to help, and the wholehearted assistance received made it possible to complete the survey in approximately three weeks' time. During the survey, the Construction

Division of the Quartermaster Corps was transferred to the U. S. Army Engineers, but the move was effected with little or no lost motion and apparently did not interfere with the erosion survey. Since that time, the work has been carried on in the Repair and Utilities Branch, Construction Division, U. S. Army Engineers.

One hundred eighty-five army cantonments, forts, air bases, and other army units had been planned for erosion control and revegetation and much engineering and agronomic work had been applied by April 1, 1942, with plans for additional units rapidly being developed. Completed plans were submitted to army officials at the posts for transmittal to Washington through army channels for approval and allocation of funds. When it is brought out that army officials had to secure the necessary seedling and other equipment, fertilizer, seed, and other materials and labor after the funds were allocated, the fact that considerable spring seeding was accomplished speaks well for the Army. To get results in such a short time with a million other things to do is deserving of real commendation.

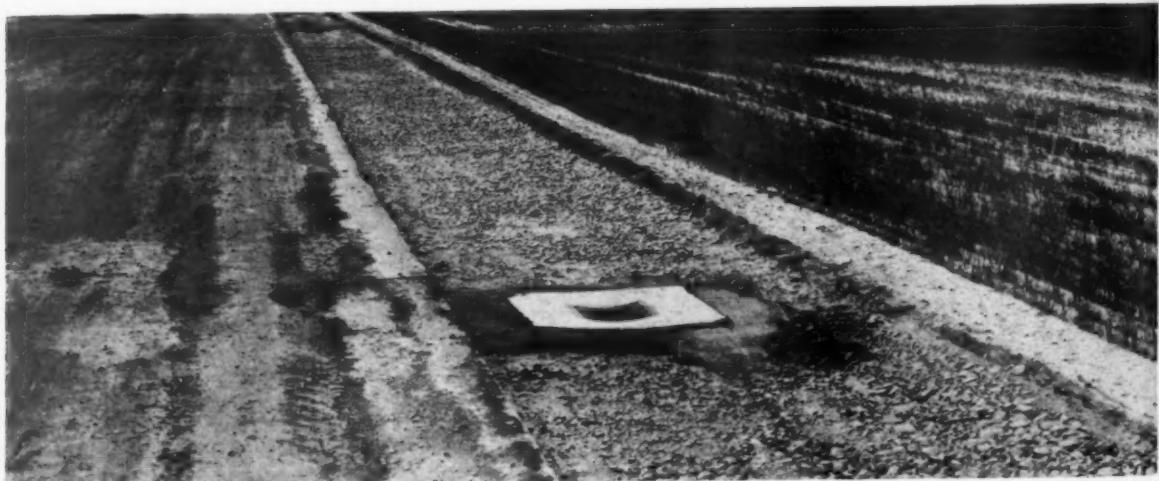
The problems encountered on the army units include all those that are found in a regular farm-land conservation program, and more. Excavation, grading, diversion and drainage ditches, levees, curbs and gutters, catch basins, retaining walls and structures of many kinds, land and seedbed preparation, lime and fertilizer application, seeding and sodding, application of topsoil, mulching, gully control, and planting of trees, shrubs, and vines represent the principal operations and practices that must be planned and applied.

The Soil Conservation Service should be proud, not only of the technical assistance rendered, but of actual savings effected. In one extreme case, \$890,000 had been requested to control bad erosion and drainage problems at one army post. Soil Conserva-

<sup>1</sup>Chief, agronomy division, Soil Conservation Service, Washington, D. C.



Gutter at side of runway filled with mud from fields at side; runway itself silted over, drainage of airport destroyed. Typical of what has happened when airfields have omitted careful provisions for regrading disturbed areas.



Hazards removed by vegetative control. The same gutter cleared and protected against future downpours by careful preparation of seedbed and use of grass mixture adapted to local conditions.

tion Service technicians developed a plan, which was accepted by the Army, cutting costs to one-third the original estimate. Innumerable other instances of reduced costs could be given, largely by the use of more vegetation and less construction materials, or the substitution of more economical measures of control.

There are other angles to our cooperation with the Army. Many CCC camps assigned to the Soil Conservation Service have been transferred to army posts

to install erosion-control measures. Our nurseries have supplied the Army with approximately 20,000,000 trees and shrubs and considerable seed of plants not ordinarily available commercially. A section on erosion control was prepared for the Repair and Utilities Handbook, which is available at all army posts. Other publications dealing with erosion-control revegetation and highway stabilization have been supplied in quantity.



Major R. H. Morrish.

One extremely interesting angle is the development of a "sprigging" machine by F. B. McAlister, superintendent of the CCC Camp at Rock Hill, S. C., to set out Bermuda grass. The machine plants four rows of grass at a time and covers an acre per hour, which is a great saving over setting the grass by hand labor. Celery planters have also been used quite effectively for transplanting grass at some points. Creeping grasses that do not reproduce by seed or that establish very slowly from seed can be handled much more readily by transplanting.

While the entire Service has assisted with this work, Major Morrish and the other men on detail with the Army Engineers deserve commendation for carrying the ball. They have made the arrangements and followed through with the innumerable details that are so necessary to do a big job in a hurry. The others, in addition to Major Morrish, who deserve special mention are C. E. Monfort, Spartanburg, S. C., now Captain Monfort, with headquarters at Atlanta; John H. Cheek, Fort Worth, Tex., now at San Antonio; Arthur Middle-

(Continued on p. 46)



Close-up of sprigging machine in planting position.

#### A TRULY AMERICAN MACHINE

A machine now being operated at the Army's airport in Lexington County is a good illustration of a fine American characteristic—ingenuity. The machine, drawn by a tractor, plants Bermuda grass sprigs at the rate of about one acre an hour. It is operated by five men, and does the work of many times that number of men.

This odd, but simple machine, was not bought from a manufacturer. It was "home made" for the specific job it is now doing. In it are only a few new parts, all the other parts being assembled junk from discarded machines. Here is how it happened to be made:

The Soil Conservation Service and the CCC were asked to equip the airport with grass, or with some other low-growing vegetative covering to control dust and for other good purposes. The job was a big one for hand labor at this time when labor is scarce. Therefore, F. B. McAlister, superintendent of the CCC Camp at Rock Hill, decided to make a machine to do the work in a hurry, and that's exactly what he did.

Basically, the machine is something like this: First, four side-by-side plows. Next, four chutes down which pass fertilizer and grass sprigs, into the furrows cut by the plows. Behind the chutes are cover scrapes, and two packer wheels. Above are four seats for men who feed the fertilizer and the sprigs into the chutes. The dingus is compact, and may be operated by any normal laborer after preliminary instruction of one or two minutes.—Editorial from the State Newspaper, Columbia, S. C.

# WAR POINTERS FOR FARMERS OF A NEBRASKA DISTRICT

Practical ways in which a soil conservation district can help to win the war are ably set forth in a letter from supervisors to farmers in a Nebraska district. Because of the care with which the local program was worked out and presented by farmers to farmers, Soil Conservation reproduces this letter in full.—The Editor.

HARRISON, NEBRASKA,

March 14, 1942.

At the present time all of us are faced with a serious situation. Probably more serious than we realize or care to admit. Many of us are wondering what we can do that will be the most useful. Some of the things that have developed seem important to us so we take this opportunity to call them to your attention.

There is a definite need for an increased production of certain products but our area can only contribute to some of the needs and it is our opinion that our efforts should be toward the increasing of production of those items which are needed and the production of which our District is suited. Beef cattle, lambs, and wool are our principal products that are needed and to which we can contribute. Increase can be made best, not by increasing the number of head of sheep or cattle which we own, but by making the livestock we have produce more pounds of beef, lamb, or wool. One method by which this can be accomplished is by better feeding. Better feeding will involve the feeding of stock during the winter so that there will not be a heavy loss in weight but perhaps a gain. Most of us have available a good supply of hay this year for livestock feeding. Let's use it during the winter and early spring to keep our livestock in the best condition possible.

Livestock losses are not confined entirely to the number that die. The loss in weight by livestock being wintered means a loss in pounds of beef or lamb that must be gained back after winter is over. For example, if you were wintering 50 steers that weighed 600 pounds each in the fall and at the end of the winter they weighed only 500 pounds each, you would have a total loss of 5,000 pounds of beef, or the equivalent of losing 10 steers of 500 pounds each. This is a hidden loss, but none the less a heavy loss to you and now it is more important when the extra food is needed by our country and allies.

Proper stocking of pasture areas so as not to overgraze them will help, as it has been shown that more pounds of beef, lamb, and wool can be produced by properly grazing range land than by overstocking with extra livestock. Furthermore the pro-

tection of range land, so that it will continue to produce is essential. They tell us that this is going to be a long war and production will be needed next year and the year after. We can also help ourselves to be prepared for the period of adjustment following the winning of the war by not being overstocked and not having depleted range lands.

The improvement of pastures by proper management and the developing of our hay and crop land by the use of soil conservation practices so that they will supply more feed is one of our jobs in this national war effort. Our Soil Conservation District is ready to help as many as possible of you in the effort. We have available some trained personnel who are loaned by the United States Department of Agriculture to help us.

While the applications already received are sufficient to keep all available personnel fully occupied it is our desire that as many of you receive assistance as possible. This may mean fewer complete Agreements can be prepared but more of you will secure needed assistance.

The use of minerals which include calcium and phosphates has been found beneficial in this area. The use of this is not only to prevent death loss of cattle and sheep, but it has been proven that its use will help in producing stronger and heavier calves and lambs which will gain faster and make the feed available go farther. The mineral supplied need not be an expensive or complicated mixture. Simple, economical minerals have given good results. Salt and mineral feeding is not expensive and the increased gains will be profitable, not only to you, but also to our national welfare.

The production of food supplies for home use by means of a garden is another way of aiding our country. By producing as much food as possible in our gardens and using home preservation methods transportation facilities needed for other work can be released. It will also make it possible to save on essential material used in making tin cans.

Farms are one of the most important sources of scrap iron and steel, now so urgently needed for national defense. Consequently a nationwide drive is being made to encourage farmers to market their

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scrap iron and steel. By collecting scrap iron now, you can help relieve shortages and stand a better chance of obtaining repair parts for your machinery. In addition, in going over that scrap iron on your place you may find spare parts that you can use for repairs. Furthermore, by selling now you can be sure that this iron will be used by our own country and not be shipped to other countries to be later returned in the form of shells and bombs by our enemies. Collect your cast iron, miscellaneous iron and steel, take it to your nearest dealer in salvage iron and steel. Do not delay in this or wait for higher prices as prices are not likely to advance much above their present level.

The problem of machinery and equipment is a serious one for all farmers. Proper care of machinery, greasing when needed, making minor adjustments that will prevent extra wear and break-

age, will help to cut down repairs and to increase the life of the machinery you have. The early purchasing or ordering of repair parts that you need or will need will prevent delays in getting these parts when needed and at the same time make possible a more orderly system of handling. Remember your machinery dealer is having just as serious time with shortages of labor and material as you are and this is one way in which you can help him and at the same time help yourself.

Very truly yours,

A. L. SCHNURR, *Secy.-Treas.*

FRANK E. ARNER, *Chairman*

C. W. GOLDEN

CHAS. FERGUSON

JACOB WASSERBURGER

Sugarloaf Soil Conservation District  
Board of Supervisors.

## THIS ISN'T THE FIRST TIME

BY ARTHUR R. HALL<sup>1</sup>

Guns or butter—American farmers never have been allowed a choice between the two in time of great wars. Generally they have had to produce the butter and wield the guns too. In all of our great wars the problem of increasing production and at the same time furnishing men for the Army and Navy has been urgent, and economic trends have been somewhat comparable. Nevertheless, each war is unique. We remember the problems of the farm front during World War I. Let us consider those of two of our earlier wars, the Revolution and the Civil War.

The task of the Continental Congress during the American Revolution was to conduct war for a nation that legally did not exist. States were asked for contributions of money and supplies, but these were not always forthcoming. New England furnished cattle, rum, and salt. The Middle Atlantic States supplied flour and forage for the Northern armies. The Continental forces in the South drew heavily upon North Carolina for meat and leather.

Possessing no hard money of their own, the Congress and each of the States issued paper money to pay for supplies. So great did this flood of paper become, and so rapidly did it depreciate, that it was said "a wagon load of money would scarcely buy a wagon load of provisions." The Congress urged the States to fix prices by laws, a policy that proved unworkable after a year's trial. At length, worthless currency forced governments and individuals to

barter their goods and services. Maryland, for instance, accepted tobacco and salt in payment of taxes and traded this for wheat, flour, and bacon for the troops. An officer of the French Army in America told of an innkeeper in New Jersey who rented his inn, a large barn, and two or three acres of garden for 84 bushels of corn. In contrast, the English had good hard cash with which to buy supplies. They were able to live well off the country, while nearby patriot forces were critically short of food.

Nutritional values were appreciated by members of the Congress even though dietetics had not yet become a science. Elbridge Gerry informed the Commissary General in March 1777 of the "wish that measures may immediately be pursued to provide gardens for supplying the army daily with vegetables . . . Without these the soldiery will be sickly and dispirited and the service injured if not ruined . . . Few men can subsist on bread, meat, and water." Nevertheless, a shortage of fresh vegetables continued.

The provisioning of the Army and civilian population was restricted by several bottlenecks, the principal one being the lack of salt, normally imported from overseas. In 1777, even before severe currency depreciation had set in, salt in Baltimore sold for \$20 per bushel. Lacking salt, the commissary department could not cure beef and pork, even though hogs and cattle might be plentiful. In addition, roads were bad, and much produce was spoiled in transit to the Army. Impeding farm work was the

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taking of great numbers of horses for the cavalry and for use in transporting supplies.

Outside the immediate areas of fighting there was relative abundance, and farmers were prosperous. Fully a decade before the Revolution, intermittent boycotts of British goods had begun to cut down the dependence of the Colonies upon the mother country, and during the war self-sufficiency increased. An English officer held captive by the Americans in the interior of Virginia said that the farmers of that section had reduced the amount of tobacco raised but had increased the cotton crop in order to clothe themselves and their negroes. The poor people made their own clothing from necessity, while the more wealthy did so as an example to the others.

In the eastern parts of the tobacco States—areas suffering from soil exhaustion, erosion, and competition from fresher tobacco lands—the war accelerated a previous tendency to shift to grain production and more conservative land-use practices. The breaking of commercial relations with the mother country enabled planters to escape from their debt bondage to British merchants, who had previously demanded tobacco production. An observer declared later: "As the culture of wheat progressed southward, the country people became more improved in their sentiments, manner of living and independency of storekeepers."

The generation that fought the Civil War recognized it as a struggle between King Cotton and King Wheat. Southern statesmen felt that their near-monopoly on the world's cotton supply would enable them to starve cotton-consuming European nations, especially Great Britain, into recognizing the Confederacy and preventing the war. The North, on the other hand, believed that bread made from northern wheat was more important to Great Britain than cotton. The war did indeed cause a cotton famine in Britain, but other influences worked to prevent her interference.

With failure of the European wheat crops in 1860, 1861, and 1862, Britain found herself more dependent than usual upon American supplies. Would the United States, torn asunder by civil strife, be able to keep up its production? Answer came with the measured pace of the seasons—138 million bushels of wheat from the Northern and Western States in 1859, but 177 million bushels in 1862, and 173 million bushels in 1863. Britain's increased demand was met, the Northern armies were supplied, and ordinary civilian needs satisfied. The exports of wheat were important, though perhaps not decisive in determining British policy toward the Confederacy. They also provided the Federal Government with gold for the purchase of arms in England.

The impressive increase in wheat production was characteristic of the general expansion in northern agriculture that took place even though many farmers "forsook farming for fighting." The upper Mississippi Valley contained vast reserves of virgin soil, linked to eastern markets by a growing system of rail and water transportation; and in 1862, the Homestead Act made this land available, practically free, in family-sized farms to actual settlers. New England Yankees, Germans, Swedes, refugees from military campaigns in the border States, flocked in to take advantage of this opportunity. Enough land was taken up under the Homestead Act during the war to make more than 15,000 farms of 160 acres each.

Nor was new land the only reason for increased crops.

Virginia's Robert E. Lee led Southern men from victory to victory, but her Cyrus Hall McCormick had invented a machine that could reap as many acres of grain in a day as could six men using cradles. This machine was destined to lend aid and comfort to Virginia's enemies. The new farms of the prairies and the older farms farther east, short-handed because of the war, adopted the reaper, the new mowing machines, horse rakes, improved threshers, and steel plows. Farmers who remained at home could maintain production because, in the words of the *Scientific American* in 1863, "Farming is comparative child's play to what it was 20 years ago."

The virgin prairies became wheat fields subjected to the world-old pioneer custom of single cropping until the soil became exhausted. Farther east, where the pioneer cycle had already run its course, more intensive methods and the substitution of the "cow for the plow" were required to maintain war production. The Maine Board of Agriculture advised that:

... improved methods of culture and labor-saving implements should be sought for... and if by any means a greater supply of fertilizing materials can be drawn from muck beds, from manure pits, from the sea shore, or by economizing home resources, no available means to this end should be neglected. It is the *duty* of every farmer to grow as much food as he can, both for men and beast; and although under ordinary circumstances it is not so good policy to extend the breadth of land sown and planted, as to improve the cultivation of a smaller surface, it may be better in some cases at this peculiar juncture.

The war emphasized the existing tendency to concentrate on animal industries in older regions. The fattening of hogs for market increased partly because of poor returns from the direct sale of corn. Even in the older parts of southeastern Wisconsin,



A Thomas Nast illustration in the January 1865 issue of the *American Agriculturist* stresses the importance of the farm front during the Civil War.

where wheat could no longer be produced profitably, beginnings were made in the dairy and wool industries. Because the cotton supply was shut off, the annual production of wool in the North jumped from 40 million pounds to 140 million pounds during the war period. Wool became an *ersatz* for cotton but the attempts to substitute linen for cotton, or Illinois cotton for southern cotton, were not so successful. The maple, the sorghum cane, and the beet were called upon to pinch hit for the Louisiana sugarcane, with varying degrees of success, but the sugar shortage was never entirely overcome in the North.

With some exceptions farmers enjoyed the illusory prosperity that comes with currency inflation. Wheat sold for 94 cents per bushel in Milwaukee in 1860, and for \$2.26 in 1864; but the inflated greenback dollar was worth only 35 cents in 1864.

The prices of agricultural products in general did move upward, but not as rapidly, or as high as those of manufactured goods. On the other hand, the Commissioner of Agriculture was able to report in 1866, the year after the war closed, that:

High prices, accessible markets and crops of average abundance have insured good profits, and as a result mortgages have been paid, farm buildings erected, permanent improvements accomplished, farm implements and machinery obtained and in thousands of instances a surplus invested in government funds.

Although cotton played an important part in Confederate diplomacy, Confederate soldiers could not eat cotton. With the principal wheat, rice, and sugar areas of the South exposed to invasion early in the war, with fresh lands west of the Mississippi cut off by enemy action, and ports blockaded, the cotton planters were well advised to transfer their

major energies to the production of corn, hay, vegetables, sorghum, hogs, cattle, and other "eatables." The *Southern Cultivator* sounded the farmers' bugle call to arms with an editorial entitled "Corn! Corn!! Corn!!!" "NOW IS THE TIME," it said, "to keep the plows steadily running, turning up the stiff clay lands to the sun and rain and air—burying under all grass, weeds, and other vegetable matter . . . be sure and PLOW DEEP! . . . Use all the manure you can get . . . PREPARE NOW to cover a larger surface than ever before—to plant and cultivate in a better style, and, with God's blessing, to harvest a larger crop!"

The campaign to increase food production was successful. One foreign observer estimated that the acreage devoted to wheat, corn, and potatoes in the Southern States east of the Mississippi almost tripled during the war, and that there was a drop in cotton production in the ratio of something like 150 to 6. As one editor reported: "If you should ask us what is the rage of our farmers just at this time, we should be fool enough to answer: 'pastu-rage.'" Nevertheless, some planters continued to produce cotton, hoping that the end of the war would bring high prices, and several States passed laws restricting cotton acreages or cotton production. The Georgia law, for instance, set the maximum area per prime field hand at 3 acres, the penalty being \$500 for each acre in excess of this amount.

Even more serious was the problem of distribution. The railroads of the South were few and poorly equipped compared with those of the North and they were not equal to the extra strain imposed by war. When barns were bursting with supplies in the lower South, Lee's army in Virginia was on the verge of starvation. Foodstuffs intended for good rebels, but immobilized in Georgia by lack of transportation, went to feed Yankee invaders on the march from Atlanta to the sea.

Chaotic financial conditions also clogged the machinery of distribution. Like the Continental Congress, the Confederate Government found itself attempting to build a monetary system without benefit of metal or credit—with similar results. Paper money becoming valueless, Confederate bonds were finally sold for produce, and a tax-in-kind of one-tenth of the total crop production was levied on farmers. A law was also passed providing for the forced sale of supplies to the Army. The local purchasing boards for impressed goods attempted to impose price ceilings by paying consistently lower prices than could be obtained in the open market. There were many complaints that farmers withheld produce from the Government and extorted high prices. The producers, in rebuttal, declared that the

amounts paid by the Government were below the cost of production and that they were discriminated against by the tax-in-kind.

For the soldiers, whether wearing blue or gray, there were some compensations for the hardships of military life. There were citations, decorations, and cheers from the sovereign multitude. For the women, children, and old men left at home there was only more work, the work left behind by the absent soldiers. They carried on alone and unencouraged, marching in no parades, receiving no cheers.

A Wisconsin editor reported that the "sturdy, muscular German and Belgian women plough and sow and reap with all the skill and activity of men . . . If need be they will go into the pineries and do the logging." Family tradition in southwest Missouri preserves the story of the farm where, the only remaining mule having been stolen by "bushwhackers," the mother and old grandfather acted as a team to pull the plow while the small son, barely able to reach the handles, guided it over flinty Ozark fields.

A series of letters from a Confederate officer to his wife, now preserved at Duke University, tells a story that was probably typical. His advice on how to conduct the plantation covered numerous matters: Make up the fences on the branch from the old spring and on the side of the Haw hill . . . have rails hauled only when the ground is frozen so the wheat will not be hurt . . . plant a good deal of the cotton land in corn this spring, for corn will be in great demand if this war continues . . . If I was home I would see the county officials in Hell before any of my negroes were sent to work on the roads . . . when work is slack, haul leaves to the horse lot and cowpen for making manure . . . tell Sol to have the sprouts cut in the rye pasture and at the Castles place and put them in the gullies . . . fatten every hog you can for bacon is scarce . . . buy salt as quickly as possible for it has gone up to \$20 per bushel in Charleston . . . if you can spare the time take a load of produce to Columbia . . . peas are worth \$1 per quart in camp and butter from \$5 to \$8 per pound.

A northern woman, a former school teacher, told her story in the columns of the *American Agriculturist*.

After [my husband] entered the army we bought the farm which we had rented . . . I hired a hand, and to the best of my ability, and by the aid of the *Agriculturist*, I succeeded pretty well . . . I labored . . . to lift the heavy payments at the appointed time . . . In the spring I paced the long rows of eight acres, dropping all the corn, in order that it might be in season . . . and I have a nice little crop of corn of near 200 bushels . . . Twelve acres of meadow were cut, and two acres oats. Last winter I had my ground

put in excellent order, and helped to plant out a choice orchard of apple, pear . . . and cherry trees . . . I raised  $\frac{3}{4}$  acre of sorghum, stripped and cut it myself, and have the pleasure of a nice barrel of molasses . . . While digging my fifty-two bushels of potatoes, and gathering my pumpkins, etc., etc., my thoughts were *far, far away!* . . . On the 28th of July my husband was *mortally wounded* . . . In doing for my little family, I hope I am serving my country as every patriotic woman should do, in trying to raise food for the "thousands in the field," and the thousands more to go.

It has generally been true that in wartime the greatest demands have been for fats, grains, livestock, livestock products, and vegetables, with moderately increased demands for fiber plants. The stimulation of farm business plus currency inflation has brought apparent prosperity, but the improved financial condition of the farmers has often lagged behind that of the manufacturing and commercial classes.

The Revolution and the Civil War were fought when machines were fewer, distances greater, and pioneer individualism in the ascendant. Total war, as the term is understood today, would have been impossible, yet even then it was thought necessary to attempt price control or adopt similar economic measures. The success of these steps was almost nonexistent. The majority of people did not see that, when a nation was fighting for its life, *laissez faire* was something less than a blessing, and that a man might serve his country by simply refraining from charging all the traffic would bear for his

products. The failure of governments to cope with problems of distribution and price stabilization confused the war effort, and in the case of the Confederacy, contributed to final defeat.

The earlier wars erected to their own memories no such monuments of destruction as the Dust Bowl, erected by World War I. In the earlier periods there was still plenty of virgin land left to be exploited. In 1934, the dust that sifted down into the Atlantic after its air-borne journey from the Great Plains gave impressive warning that in future wars the margin of increased production would have to be drawn from reserves of fertility built up by conservation practices, rather than from unbroken prairie sod. On the other hand, the wars before 1917 offer examples which we in this war would do well to follow.

Tidewater Virginia shifted from the unprofitable production of tobacco to wheat cultivation in the Revolutionary era. The change from wheat to animal industries began during the Civil War on the overcropped fields of southeastern Wisconsin. The defeat of the Confederacy and the subsequent return to cotton cultivation should not obscure the fact that during the Civil War the change from cotton to foodstuffs was successfully accomplished in the South. These are object lessons for modern farmers of the wheat and cotton belts now that the demand is for animal products, diverse vegetable oils, and vegetables, rather than for their traditional articles of cultivation.

## PUERTO RICO MEETS THE CHALLENGE OF WAR

BY G. L. CRAWFORD<sup>1</sup>



A sample of the resettlement homes of the P. R. Reconstruction Administration.

<sup>1</sup>Assistant director, tenant purchase division, Farm Security Administration, Washington, D. C. Formerly in charge of the Soil Conservation Service in Puerto Rico and the Virgin Islands.

Puerto Rico, Atlantic outpost of the United States, is recognized as the place where agriculture is handled more intensively than anywhere else under the American flag.

The Department of Agriculture, without knowing that it was preparing for war, has been planning programs there for a number of years; its problems were to cope with mountainous slopes, to produce crops, and to develop agriculture generally. It may now be asked, is Puerto Rican agriculture ready for an emergency—can it rise to the dual needs for expansion and intensification? In this article I touch on a number of the important institutions and analyze some of the factors now coming to the front in agriculture's war program.

The Insular Department of Agriculture rooted early, and it has always cooperated closely with the Federal and Insular organizations. The Federal ex-

periment station was established at Mayaguez in 1900, serving mainly as an outpost for scientists from the Department of Agriculture. The Insular experiment station was set up in 1910 at Rio Piedras. The land grant college, created in 1909, opened its doors for students at Mayaguez as a branch of the University in September 1911. Its functions are similar to those of a land grant college in the States. It is training young men to grapple successfully with the agricultural problems of a densely mountainous, tropical, agricultural island. Many of the local graduates handle their own farm operations or are employed by the Insular or Federal Governments. A number of the graduates each year find their way to colleges in the States for advanced work. After completing such work they usually return to Puerto Rico, where many of them become leaders along the line of their training.

The Extension Service and Vocational Agriculture, in addition to the teaching of adults, are instructing more than 10,000 boys and girls in a better way of farm life.

During the last decade, largely because of the depression, there has been an increase in the number of Federal agricultural agencies. The Puerto Rico Reconstruction Administration has been a pioneer in actively stimulating the social as well as the economic aspects of agricultural betterment. It has purchased land and built more than 5,000 homes for settlers. This organization has fostered the construction of hydroelectric water power, cooperative marketing, tick eradication, soil conservation, new industries, and many other worthy enterprises. Other agencies coming in subsequently have taken over many duties formerly performed by the PRRA, which has gradually tapered off much of its work.

The Works Progress Administration arrived in Puerto Rico three years ago and is now carrying on much of the load once borne by the PRRA, especially road building and defense activities. It employs at times 40 or 50 thousand people.

The Forestry Service has established a forest research station, handles two Federal National Forests and cooperates with the Island government in maintaining and developing a number of insular forests. The Service develops mahogany and fast-growing trees on a large commercial scale. It is also working effectively with several hundred individual farmers by putting them in charge of small forest areas and supplying them with homes in the mountain areas where they can produce a subsistence living on a limited acreage, and can earn cash during the year through sale of charcoal made from the trees thinned out of the forest.

The Agricultural Adjustment Administration

came to Puerto Rico in 1934 and started the sugar program. In 1936 it broadened its objectives to include and stimulate the conservation of soil by cultivating the land on the contour and by growing leguminous crops. Recognizing the importance of food crops for present and future needs, the AAA adjusted its program to the extent that plans now call for the planting of food crops for human consumption on at least 20 percent of the cropland on the farm, excluding sugarcane and orchards. The minimum requirement is one-tenth of an acre and the maximum requirement 25 acres devoted to this practice in 1942. The sugar program this year includes the growing of leguminous crops suitable for human consumption on 7 percent of the cropland operated by sugar producers. The AAA hopes by such emphasis to help meet the pressing needs of the people of the Island for home-grown foods.

The Soil Conservation Service came in 1936. At once began many soil conservation demonstrations which showed the farmer how to prepare his steep land for cultivation without inviting soil losses. A five-year land use program was worked out by SCS technicians in cooperation with 5,000 landowners. The SCS also cooperated with county agents and vocational teachers in demonstrations and in the development of soil conservation practices on the nine demonstration farms of the Extension Service and on the 116 vocational school farms. AAA and SCS activities in Puerto Rico have made farmers conscious of the importance of conserving soils on mountainsides, and have shown what can be done toward that end.

Farm land bank, intermediate credit, short-time credit, and emergency corp loans have all functioned satisfactorily in Puerto Rico for a number of years. Tick eradication has been successfully carried on cooperatively by the Bureau of Animal Industry, the Insular Government, and the PRRA, 80 percent of the work required to eliminate the cattle fever tick from Puerto Rico having been completed.

Youngest organization in the island is the Farm Security Administration. FSA brought its tenant purchase program to Puerto Rico in 1938. In September 1941 the rural rehabilitation program followed. The Tenant Purchase Division of Farm Security has enabled more than 200 farmers to purchase farms and to construct houses and farm buildings. The Rural Rehabilitation Division has loaned funds, with which to purchase equipment and to make a crop, to tenant-purchase borrowers acquiring farms. Only one TP borrower has failed to meet all obligations. Rural Rehabilitation has gone further, has made victory loans to 3,600 small farmers in distress and in some instances has made small grants.



This Puerto Rican mountainside will "stay put." Contoured pasture in foreground; cultivated land, operated on contour, higher up. The sodded ditch takes care of excess water.

The Insular Experiment Station at Rio Piedras has many accomplishments to its credit; for example, the development and improvement of sea island cotton. The Station has developed a strain of cotton that has a staple length of two inches or more, with excellent strength and character. The Federal Station at Mayaguez works on problems which affect the States as well as the Island. It has imported numerous plants of economic value, including quinine, and plants that produce essential oils for medicinal and perfume uses.

There are many other agencies in Puerto Rico that have done research and semi-research work on some phase of farm life, that are contributing to the betterment of the country. All these various organizations are not only meeting the challenge of the war, but doing so as a united group. Duplication and overlapping of work is avoided, teamwork achieved, by the cooperative effort of the local government headed by the Island Governor and the USDA War Board composed of 10 heads of Federal agricultural agencies.

By way of summarizing, Puerto Rico is meeting the impact of the war problem because it started a number of years ago to improve agriculture in general. The Island has developed local agricultural

leaders through its agricultural college. Agricultural Extension Service and Vocational Teaching have carried on educational work in agriculture, training boys and girls—and also fathers and mothers—in the better way of rural life. The agricultural experiment stations have developed new crops and have led the way for a more scientific agriculture. The AAA and the SCS have made farmers conscious of the waste they were causing through the practice of running crop rows up and down the mountainsides. Now, when farms expand to increase food crops, there will not be any large areas extremely damaged due to hazardous methods, such as occurred in the western part of the United States during the expansion of production during World War I. Farmers will be careful to use conservation methods. With credit organizations established and Farm Security facilities at hand, there is no reason why all strata of farm life cannot be supplied with the funds needed to grow food crops and to build better homes.

By having laid a careful groundwork of preparation, Puerto Rico is now ready and willing to meet every condition that war may bring with enlightenment and with courage.

# CONSERVATION FOR TODAY AND TOMORROW

BY H. H. BENNETT<sup>1</sup>

Good agricultural land is the most important of all man's material possessions. From pre-historic ages to the present—during all the countless centuries of man's upward struggle—human beings have lived altogether or chiefly from the products of the land. From the land they have taken their food and shelter and clothing. Thus it has been, and thus it will be, as long as human life remains on earth. Land—good land—is fundamental to the needs of man.

This has never been more true than today. With the world more nearly completely embroiled in war than at any other time, our soil becomes more necessary to existence than ever before. Good land is important at all times, because it is the source of human sustenance and security. In time of war, good land is as essential as good guns and ammunition.

Today, in the year 1942, the land of the American continents is vital not only to us who live here and work this land—it is of vital importance to all the nations and peoples of the world.

It is to this land of ours—billions of acres of cropland, grazing land, and forests, stretching from Hudson's Bay to the tip of Patagonia—it is to this land that the embattled democracies look for salvation.

They look to us in America—and when I say America, I mean all of us from the Arctic to the Antarctic—for many things: for leadership and moral support, to some of us for men and guns and ships and planes and tanks. No less than these, they look to us for food to give them strength to fight and survive in their dogged war against the enslavement of mankind.

We dare not fail them, for all of us here in America are in this war to some degree—officially or unofficially, actively or passively, actually or in effect. And we are the only nations who can supply these needs. We are the only ones who have the land and all the other requisites to do this gigantic and essential behind-the-lines job of farm production.

## Importance of the Productive Lands of the Americas

Only in America—North America, Central America, and South America—is there the land, the manpower, the will, and the means to assume this task.

<sup>1</sup>Chief of the Soil Conservation Service. Address before the Second Inter-American Conference on Agriculture, Mexico City, July 6-16, 1942.

Only the Americas have the resources to do this job today, *and to keep it up for years to come*, as we shall have to do since our production job here in America won't stop with the signing of the peace treaties.

In the years that will follow the armistice—and nobody knows how long that may be—America will have to help feed the world. The occupied countries today are reduced to economic and physical slavery; industry and agriculture are in shackles, and all the resources of the vanquished nations are exploited by the invaders.

Peace will not magically restore those ravaged lands to productivity, the ruined farms to prosperity, nor gear the war plants to peace production overnight. It cannot by a few strokes of a gold pen give back normal living to all who have felt the oppressor's heel. We in America shall have to help in all these things.

We shall have to help business in those countries to its feet through the orderly processes of normal international trade. And before the agriculture of the occupied lands can regain its old efficiency, we shall have to help feed the people of those lands. We shall have to be the larder, not only of democracy, but of most of the world, for a while at least. Our land, our acres and hectares of cropland and grazing land here in the Americas will have to do this job. We can do no less, for that is what this war is about: It is a war of survival and for the maintenance of a virile civilization that reckons with the welfare of all people and the brotherhood of man. And we shall not let our brothers want.

We have the land to do this job—if we use our land wisely. We Americans are among the richest people in the world today in agricultural resources, but I regret to say that we have not always used those resources wisely. I know that we at home in the United States have not done as well as we should in this respect.

In the early days of our country there were not many people and there was a great deal of fine rich land. The first few thousands of people and those who followed them to North America thought they had come to a continent of inexhaustible land—land that would never give out. So our forefathers used the land carelessly, and as each new generation rose it followed in the footsteps of the elders and continued the mining and abuse of the soil. This was not done with deliberate disregard for the outcome,

but because of failure to realize what the result would be and because of the belief that there was plenty of good land.

### Carelessness in the Use of Land

The results have been serious, and for a great deal of land they have been tragic. Some of our farm lands that once were among the best in the United States have been ruined. But we know now what our mistakes were and how to avoid repeating them. And we have learned as a result of years of study, research, and farming experience how to protect the land and how to go about restoring some misused portions of it to productive utility.

We have learned more than that: We have learned that the same things which help to restore damaged land and which enable us to cultivate the soil without damaging more land also help us to obtain increased yields of grains, vegetables, fruits, forage, and animal crops.

In other words, we have learned that conservation of soil and water resources pays big dividends not only in the preservation of our cropland and grazing land but also in better production from those lands.

We have found, for example, that we can greatly increase the per-acre yield of corn through farming methods that conserve soil and rainfall. In the State of Indiana two adjoining fields were tested. One was put under a five-year rotation of corn-corn-soybeans-wheat-clover with fertilizer and manure added. The other field was not treated. The average yield over an 11-year period was 64 bushels of corn per acre as compared with an average of only 39 bushels per acre for the same period from the untreated field of similar land.

In the State of Iowa cornland farmed on the contour—on the level, around the slope—produced 56 bushels of corn per acre as compared with 33 bushels from similar adjacent land on which the corn was planted up and down the slope.

But I want you to notice particularly that first example in which the yield of corn was increased by the simple conservation method of crop rotation. I want you to pay special attention to that because it is extremely significant.

As you know, greatly increased production of many farm crops, including corn, is needed now to meet the additional demands resulting from the war. Now, laying out contour lines and contour strips requires a certain amount of preparation and time, and building terraces takes even more. If we grew most of our corn on sharply sloping land and had to terrace it before we planted corn, we could not

in the short time available produce all the corn that's needed. However, that is not necessary. By growing corn on land that is level or practically level, and by using such simple conservation practices as liming, fertilizing, and manuring the land, we can locally increase the yields very easily and thus produce the additional corn we need for the war effort.

### Increased Production Through Conservation

Perhaps I should emphasize here that conservation is not entirely a matter of physical works such as terraces. Terraces are *soil-protection* measures; they increase and maintain yields by holding on and in the land the rich growth-promoting topsoil and the water from rains.

Such simple practices as liming, manuring, fertilizing, and crop rotations, are *soil-maintenance* measures. And it is an essential part of a thorough farm-conservation program to maintain a favorable soil structure as well as the fertility of the land. All cropland—level as well as sloping—must be maintained, if it is to continue producing big yields.

What we have been able to do with corn, we have done also with other important crops. We have found that potato yields can be increased by conservation farming methods, and cotton, and fruits. Such a simple practice as mulching, used alone, has resulted in marked crop increases in numerous instances.

And by careful management of grazing lands we have been able to increase the production of beef. Production of milk has been increased simply by rotating dairy herds on pasture land. Some of our farmers have increased their pork production very inexpensively by fattening hogs partly on legume pasture instead of entirely on corn. And the legumes improve land where corn tends to exhaust it.

Let me cite another example: One of the great needs of the war is for large increases in vegetable oils and fats. Soybeans constitute one of the temperate zone's most important sources of vegetable oils. Farmers usually have grown soybeans in rows drilled far apart and cultivated like corn. We used to think they had to be grown that way and we regarded the erosion frequently resulting as inevitable—as something we couldn't do anything about.

Now, through research and experience, it has been proved that by drilling the soybeans close together erosion has been practically stopped and better yields obtained at the same time. It is simply another case where soil-conservation measures have increased crop yields while protecting the land.

All this is very good news for the United Nations. It is of extreme importance because it is the only way that we in the United States can meet the heavy war-time farm production goals we have set for ourselves. It cannot be done by the old, outmoded farming methods of yesterday. And even if it could, it would be only at the grave risk of damaging more valuable land, some of it beyond the possibility of practical restoration.

### Erosion is Widespread

Unfortunately, this situation is not peculiar to the United States. There is erosion in varying degrees throughout America, as indeed there is throughout most of the world. I have traveled in several of the South and Central American republics, and the United States Department of Agriculture, at the invitation of some of the other American governments, has sent missions into some of those countries to study the erosion problem and other agricultural matters. Toward the end of 1941, I went with several other men from the Department of Agriculture into Venezuela for such a study.

These countries, like other American nations, suffer from soil erosion. For example, erosion is particularly bad in the northern and eastern parts of Venezuela, especially in the mountain sections, where there is severe sheet washing and gullying. I am happy to say that the Venezuelan government is making an intensive study of the problem and taking steps toward its solution. In Colombia—where there is also a big erosion problem—one very fine thing provided for is the establishment of "protected forest zones" where lumbering operations may be carried on only under government supervision. Colombia also is establishing state nurseries to aid in the reforestation of denuded areas.

There is severe erosion in parts of Brazil, also. In the central part of the State of Minas Geraes the problem has become serious since agricultural expansion has caused the clearing of much forest land. And reforestation has not been carried out adequately. However, demonstration and experimental work on erosion control seem to be getting under way. Slight to severe erosion has affected about half the farming land in Sao Paulo province, where the mechanization of agriculture has advanced further than in most other regions.

Chile, too, has its erosion problem, and its frequent accompaniments of drought and flood. There are few forests in the northern Chile valleys, and this results in tremendous floods and the loss of a great deal of topsoil. Often this topsoil, washed down from upland farms, is carried into reservoirs, some

of which have been ruined by sedimentation. An example is the reservoir above Pangal Dam, in Cochapoal. This was completely filled with silt in about nine months. Other sections of Chile suffer from erosion, too. The government already has taken steps to alleviate the situation. The control measures include tree-planting on marginal farm-lands; changes in agricultural methods, particularly in the arid areas; and encouragement of cattle raising in the humid zones. Soil-building and tree-planting are somewhat difficult in the drier areas where droughts are frequent during summer.

Argentina has some serious erosion. Wind erosion is a difficult problem in the semiarid middle west—the eastern section of La Pampa, southeast of Cordoba, and west of Buenos Aires. Serious erosion by water is seen in areas of abundant rainfall where there has been too-intensive cultivation and grazing of steep slopes. And here again the government is tackling the problem in businesslike fashion, I am informed, by establishing a soil-conservation program.

In Peru, while there is considerable severe erosion locally, the situation is somewhat different. Hardly enough rain occurs in some parts of the country to cause serious erosion, and there is comparatively little forest land to be preserved. In some of the more thickly settled portions of the low-rainfall regions conservation becomes largely a matter of saving water for irrigation along the streams, such as those traversing the western desert areas.

Water for irrigation is obtained frequently by pumping it from depths of 50 to 500 feet under the surface of the principal river valleys. Peru also is experimenting with diversion of flood waters from the rivers to irrigate suitable adjacent lands. If these trials prove satisfactory, it has been predicted that farm production on irrigated lands may be increased by a third and that portions of present desert areas may become croplands.

It may be of interest to quote a few excerpts from a report by some of the specialists of the United States Department of Agriculture who made a study of land and agricultural conditions on Ecuador:

"Intensive cultivation, particularly on the very steep mountain slopes, has contributed to much soil wastage from erosion," the report says. "This erosion is due to wind as well as water, but with the exception of a few of the arid regions where the soil is very light, water erosion is the most severe. Runoff from rain and poorly controlled irrigation water has caused severe damage and fields may often be seen where the top layer of dark humus-laden soil has been entirely removed and the land has had to be abandoned. . . . In areas where there is only

a thin layer of organic soil covering loose sandy material, and where dry farming methods are practiced, wind erosion causes severe damage on exposed areas. . . . Examples of almost total destruction of land by water erosion were seen near San Gabriel in Carchi Province, at Ambato in Tungurahua Province, and at Guamote in Chimborazo Province. Severe wind erosion was seen near Latacunga in the Province of Cotopaxi, at Riobamba and Palmira in Chimborazo Province, and at Cañar in Cañar Province. This wastage of land naturally throws an additional burden on that yet remaining, and one of the greatest problems facing Ecuador in the future is that involved with finding adequate land resources to support the population."

It has been estimated that in the inter-Andean section of Ecuador, approximately 75 percent of the land originally in cultivation between Loja and Cuenca, along an airline distance of about 150 kilometers, has been abandoned because of erosion. Only about 3 percent is now in cultivation. Here many of the slopes are very steep and they have been cultivated for several centuries.

In Mexico erosion is a serious problem in numerous localities, particularly on the steeper slopes that have been under cultivation for some generations. In various localities overgrazing has started some severe washing. One of the most violently eroded sections is in the hill country surrounding Lake Patzcuaro in the State of Michoacan.

It is interesting that in some parts of Mexico, farmers have long practiced the building of stone fences across slopes approximately on the level, apparently to catch soil moving downhill under the impact of uncontrolled runoff from rains. After a time this practice has brought about the development of bench terraces of a decidedly stable nature—pretty nearly secure against erosion. Something of the same kind has been accomplished in some fields with contour plantings of maguey.

Again, there are areas in northern Mexico where grazing has not been severe. Some of these localities have the best natural grazing lands to be seen anywhere under low rainfall conditions.

The problem of erosion is reported as serious in some parts of Chile and Uruguay. In the West Indies, much land has been severely impoverished—in Puerto Rico and Haiti, particularly. Certain parts of Cuba have suffered, but in that country considerable land is highly resistant to erosion because of the nearly level surface and the high capacity of the lataritic soil for absorption of rainfall.

In various parts of the Western Hemisphere the rates of erosion have been astoundingly rapid because of the torrential character of the rainfall, high

susceptibility of the soils to washing or blowing, traditional supposition with respect to a superabundance of productive American soil, and lack of information on and interest in the subject. Probably no race, civilized or barbaric, has wasted productive agricultural land so rapidly as we Americans have wasted land in many localities and over some large areas. We have not set about to do this wilfully, of course. We just haven't thought about what we were doing, that is, not enough of us have thought about it.

Conservation work for the control of erosion has been practiced in various parts of the world almost since the beginning of agriculture. In the Andes the Incas established a stable bench agriculture, much of it provided with irrigation, that represents one of the best pieces of engineering works ever accomplished by man. On some of the steeper slopes, rock-walled terraces perhaps 6 or 7 hundred years old, possibly two thousand years old, are still holding and some of them are still used for crop production. These were built at great expense, at a cost amounting to \$18,000 an acre, as computed on the basis of prevailing prices of labor in the United States.

When I say that we have permitted erosion to get ahead perhaps faster than in any other extensive part of the world, I do so with the knowledge that great civilizations have been effaced from the earth because of soil erosion.

This assertion is not made out of thin air. We have looked into the effects of erosion in some of the older parts of the world; we have surveyed the ancient lands extending across North Africa and on across the region known as the "cradle of the human race" into the country east of the Euphrates. Dr. W. C. Lowdermilk, of the Soil Conservation Service, had completed this survey when World War II broke out. In his reconnaissance great areas of land were found ruined by erosion—land that formerly supported dense populations. In places not only was the land stripped of its topsoil and horribly gullied, but the subsoil had washed off to bedrock. Archaeologists, working in those regions of devastated land, often have to dig deeply to reach the tops of buildings of the dead cities they seek to study, as at Babylon, Khorsabad, and Antioch. At Antioch, Syria, where St. Paul struggled so valiantly to gain recognition for the Christian religion, it was necessary to dig down 18 feet in parts of the city in order to reach the magnificent structures of marble that the Apostle knew.

Had to dig through what?

They had to dig through accumulations of the products of soil erosion—the very substance of the land that made it possible to build the cities, wasted

and misplaced by the action of water and wind.

The land is gone. The people are gone. Great civilizations have disappeared from the earth: Babylonia, Assyria, and others. The remnants of the peoples of some of those wasted areas are still to be seen wandering about in search of water and grass for their flocks.

But the people of those civilizations used their lands for centuries on centuries—for thousands of years—while some of us in parts of the Americas have used up within a single century enough good land to support whole nations. And the unnecessary devastation is still going on in too many localities.

### After the War

After the war are we going to return to or hold on to our old ways of wastage? Or are we going to make up our minds to pull out of this slough of waste—get under way a program of soil defense that we shall not under any circumstances permit to be postponed? We've waited too long already. The job is vastly more difficult now than it would have been had we started a program a hundred years ago or even at the close of World War I.

Can we have a permanent agriculture on the more-sloping lands of the Americas without an active, continuing, and sound program of soil and water conservation, supported determinedly by all the people?

I think the answer is No.

And people cannot always have security merely by passing laws, issuing regulations, building institutions of learning and public edifices, or debating social and economic affairs.

There must be development of a public conception of the indispensability of productive land, such as will demand a continuing program of work that insures adequate protection of the land.

### What Is It Man Has Overlooked?

Strange how so few of our great men—our historians and economists, scientists and professional men, statesmen and teachers—have recognized the full economic and social impacts of unrestrained soil depletion and unwise land use. The ancients knew about the problem, and in various parts of the world their conservation efforts are extensively written on the ground in the form of rock-supported terraces or the remnants of engineering structures employed in their agricultural operation. But these records have not been written into our histories, not even in our volumes on economics and agricultural techniques.

Now and then individuals have done outstanding soil conservation work. Some have recorded their practices and results in the literature. But the number has been too few, and for decade after decade not much was done beyond these individual accomplishments.

Too generally, I am afraid, public statements and proposals about the causes and cures of world tribulations—words that catch the signboards of the times—contain too little about this orgy of waste that began in ancient time and brought on repeatedly misunderstandings, raids, and wars between neighbors and communities and between regions and peoples. Men have been making and talking and writing about these well-meant proposals down through the ages, from before the time of Christ to the issuance of the latest daily paper. But what has come out of all this study, public discussion, and law-making about new ways for directing the affairs of mankind?

They have done good, no doubt—helped to hold things together here and there for a time. But they have not solved all the pressing problems. They have missed something. We now have spread across the world—in the year 1942 A. D.—the most dangerous of all wars.

What is it our leaders have missed?

It is my belief that they have overlooked the greatest fundamental force for good—for good to all the people of the world. Seemingly, they have left out of their considerations the fundamental significance of productive land—its utter indispensability to the welfare and brotherhood of mankind.

### Significance of Productive Land

Working out on the land with many kinds of people and appraising the relation of productive soil to the welfare of the farmer and general public, my years of experience studying the lands of the United States and various countries in South and Central America, and elsewhere, have led me to the belief that men come to a better understanding of one another under such surroundings and circumstances. Out on the land there seems to be a kind of common denominator that influences men. Perhaps this intangible thing awakens a common conception of the close relationship existing between man and nature or the complete dependence of man upon nature—upon productive soil, the mother of us all.

Accordingly, I propose that in our national and international affairs all of us here in the Americas undertake to make greater use of this good will to be found in productive land.

Consider, for example, the effects of the soil and water conservation work carried out on the Elm

Creek demonstration project near Temple, in the Black Belt of Texas. Here, in a solid block of 34,000 acres, 174 Texas blackland farmers in the watershed of North Elm Creek have completed a job of soil conservation that is attracting world-wide attention. With practical farm measures these operators are holding back much of the rainfall that used to run off the land, sweeping away productive soil and cutting fields and pastures into a waste of gullies.

This is the largest cooperative effort of its kind that has ever been carried out in the United States or anywhere else that I know about. Across the 174 farms every acre of every field and pasture, and every wasting gully has been treated for conservation. It is most spectacular, visually and in measure of results attained. Its zebra-striped patterns of conservation field measures wind becomingly around the slopes and valleys without regard to fences or property lines. Air passengers note this as they fly overhead.

Here is real conservation—safe and rewarding production through scientific measures technically applied to the land. What it really amounts to is selective service for each acre of land: that is, use of the land according to its needs and capability to produce.

### Demonstrating Erosion Control

By petition of the farmers themselves, the Elm Creek work was started as a demonstration of practical ways for conserving soil and rainfall, back in those pioneering days of 1934 when soil conservation as a regular part of farm practice in the United States was comparatively unknown and untried. The original cluster of demonstrating farms expanded as the work progressed—as the strip crops and terraces and contoured rows crept across fields to protect more and more of the eroding slopes. As benefits became manifest, soil conservation spread out in every direction—a farm here, a small group of farms there. The demonstration became an example not only locally but throughout the famous blackland belt of Texas, and indeed throughout all of agricultural America and many distant parts of the world.

Some six hundred farms—613 to be exact—eventually joined in the demonstration work, which covered the 206,000-acre watershed of Elm Creek. These farms were all completely treated, according to need and adaptability. After the original work was under way for some time the farmers saw what it meant, the people living in the tributary watershed of North Elm Creek asked to have the work extended to their neighborhood.

It was about 60 to 70 years ago that the virgin prairies of central Texas, richly clothed with little bluestem and other native grasses, first felt the prick of the plow. But before these farmers of the Black Belt started in for soil conservation, nearly every hilltop stood out conspicuously with telltale splotches and streaks of cream-colored subsoil. Rich black clay land still followed the lower slopes and stream bottoms, but from fields on the upper slopes the dark topsoil had been floating off in the drainage waters from the successive rains of generations until lighter colored subsoil of chalk and marl began to show at the surface. Farmers finally sensed that they were losing their principal capital—their productive topsoil. But until they got together and worked with the erosion specialists, they apparently felt helpless to deal with the problem. The usual practice was merely to devote more eroded fields to oats and sorghum, while letting the cash crops—cotton and corn—have right-of-way on the less eroded flat lands. This really was about the same as doing nothing to hold back the flood tide of soil wastage.

These farmers had been accustomed to planting their crops in rows that ran up and down slopes. That was bad practice. Water, concentrated in the gutter-like furrows between the rows, swept away soil from some fields almost as fast as the farmers could have hauled it away on trucks. And there was sheet erosion over entire fields with every heavy rain.

In Texas alone, within less than a hundred years of agricultural occupation, enough soil has been lost as the result of unnecessary erosion to support the people of Palestine for many generations. There have been wind erosion and dust storms over the wheatlands of the Panhandle; sheet washing and gullying over the vast central, southern, and eastern sectors; floods and washouts along rivers like the Trinity and the Brazos; and steady deterioration of the grasslands west of the Pecos.

The North Elm Creek project deserves the careful attention of all who are interested in permanent systems of farming and practical ways for getting such permanency. Here, soil conservation plans were made without regard for county boundaries or even farm boundaries. The prime consideration was to protect the land as a whole: to lay out the controls along natural rather than artificial lines. During the past 7 years farmers of this particular drainage basin have cooperated spiritedly with the technicians of the Soil Conservation Service, as well as with one another, in order to get complete control of wasteful erosion. Today the measures that have been used on the land are effectively holding soil and water on the 34,000 acres of these 174 adjoining farms.

With respect to production, the conservation work has resulted in greatly increased yield of cotton and an increase of more than 4 bushels of corn per acre as compared with yields obtained on similar farms of the locality where there has been no conservation work. The increased income has netted the farmer an average of at least \$2.50 per acre over and above that derived from surrounding farms.

One of the most significant features of the whole job has been the comparatively low cost of installation and maintenance. By building terraces across farm boundaries, farmers in the watershed have been able to eliminate a large number of drainage outlets that would have been necessary if each farm had been treated as a separate unit without consideration of the needs and relationships of adjacent lands. Where terraces met on farm boundaries, a joint outlet was built. Each farmer gave half the land needed for the channel; and both agreed to share the costs of construction and upkeep.

And these joint conservation operations are only the outward manifestation of a deep-seated spirit of mutual helpfulness that resides in North Elm Creek watershed. Probably nowhere has there ever been a more impressive example of neighborhood co-operation in the solution of a common land problem.

Many of the farmers entered into signed agreements with one another for permanent maintenance of the cooperative work—the work done along waterways and gullies and other places affecting farms that touch one another. I have been told that such agreements, if recorded at the Court House, would become permanent attachments to the land.

#### **Men of Foreign Origin Work Together**

The forefathers of these cooperating farmers came from Austria, England, Germany, Czechoslovakia, Scotland, France, and other old world

countries, but today they're farming the largest solid block of conservation treated land in the world to help produce the food, feed, and fiber necessary to defeat the Axis powers.

Their unrivaled achievement in planning and establishing complete conservation farming practices has been told wherever soil conservationists gather. Nowhere else in the world, to my knowledge, has there ever been a more impressive example of co-operation in the solution of land and water problems. I consider this one of the most significant jobs ever completed by mankind. Not even the building of the Pyramids can be excepted.

The work of the Mareks, the Frerichs, the Crenans, the Winklemans, the McAtees, the Klapkas, the Hoffs, the Monroes, the Pelzels, the Chernoskys, the Kahlers, the Watkins, the Voltins, the Neinasts, and all the others who cooperated in this conservation project stands as a monument to the fundamental economic and spiritual meaning of productive land.

"I Am an American Day" was observed in the United States on May 17, 1942, under proclamation of President Roosevelt in honor of American citizens born in other lands. Most of the North Elm Creek farmers of foreign extraction, however, are native citizens of the United States, the sons and grandsons of men and women who came from the "old countries."

"We are ALL Americans here," the North Elm farm people will tell you. And they have proved it in scores of ways. Besides sending their sons to the armed forces, they have participated 100 percent in the aluminum and scrap-iron drives. They have overshadowed every quota set in war-stamp and war-bond drives. Several farmers have pledged \$500 per year in war bonds—for every year as long as the war lasts. One young man who was unable to pass the army physical test immediately put \$1,300 into war bonds.

*To Be Concluded in September Issue*

## **OUR TRAGEDY AND OUR HOPE: A Review of THE LAND**

**BY PHOEBE O'NEALL FARIS**

This new film is a 45-minute-long dose of bitter medicine for the people of the United States of America. It tells the somber and true story of the fate of much of our soil—and many of our people—by way of ruthless exploitation of farming, forest, and grass lands throughout our agricultural

history. The motion picture, recently completed by the Agricultural Adjustment Agency, has been distributed for non-commercial showings. Its purpose, apparently, is to cure by torture, like sulfanilamide; to cure us, all of us, city people and country people, of indifference or arrogant disdain, as the case

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*"Along our highways there are more than a million homeless people. We came to this family moving out. The land had played out on him, he said. Most of our migrants are young people with young children. We had another name for these people once. We called them pioneers. Heading West—that's where most of them go."*

may be, by flashing before our eyes some of the most completely devastated lands in the world, and old people, little children, middle-life people, ill, bitter, and disillusioned, wearily trudging the never-ending road, retracing, foraging like refugees from the horrors of an invading ferocious army, all going nowhere in search of somewhere and peace. These are real people and this is actual torn land within our own borders. We can take it or leave it, but we had better take it.

*The Land* is not a faked motion picture, nor is it acted. The slashed and hacked gullied land of the once rich Southland is real; the aged negro, a dark ghost in the doorway of the ruined mansion, is real; the boy "picking peas" in fitful sleep, the tall man with the unforgettable hopeless face left alone with his brooding thoughts—these are real people. These are our problems; ours because we are Americans and have only ourselves to blame. We must face these problems and go all-out to solve them now,

even in the midst of our greatest emergency, total war against foreign evil. We have always done things in a big way—why not take all our bitter medicine in one dose?

I sat alone in a dark, stuffy room in the bottom of a mammoth building, on the first hot day of the year, for a showing of *The Land*. This was a peculiar experience. I went home slowly, thoughtfully, pondering the United States of America, the portion of Earth and the people for whom we are now fighting with all we have. I knew that hot day, as I know now, that soil conservation is rapidly becoming one of the "big things" in this country, that nearly half a billion acres of our land, in 41 States, are now covered by soil conservation districts; that six million farmers are "on their toes" to our land problems and are energetically going about the business of installing soil conservation systems on their farms. I know that this figure does not include the many thousands of farmers in between the districts who,

because they love their land, because they are true husbandmen, are setting up soil and water conservation practices without government or State or other aid, using the simple means they have at hand and their knowledge of natural laws and functions learned through close association with the soil and the water courses, plus information gleaned from the farm paper and Department of Agriculture and experiment station bulletins.

I knew that day that the people who made *The Land*, the new documentary film I had just seen, those gifted people were quite as well informed as I—and far better—about soil conservation being a big thing in this country today. And so I was puzzled in my mind for some time as to why *The Land* had made me feel that—for all our efforts during the last decade, for all our spread-of-practices that now reaches from border to border and sea to sea, to Africa, to Australia and other far lands, for all our mammoth war production program, launched with high hopes and already going full swing—we have very little good land left in the country!

But this was absurd and I knew it. Why then, had *The Land*, beautifully filmed by Robert Flaherty, a great artist and famous motion picture photographer, with Russell Lord's fine Prose, why had this film sent me into the depths as no Hollywood-made movie ever could? It was because of the people! We can "fix" our eroded and spoiled lands, and we will. But people are not so easily "fixed." Those people, many of them, probably most of them, dislodged from the land by the suffering land itself—bared and gashed hills, wind-battered plains, cotton lands riddled by cotton, even the tall-grass country denuded of its tall grasses—those people must be returned to the land and they must be shown the straight-and-narrow, the right way to use the land, and must not be allowed to deviate from that way. I thought of farm people I know, proud to work together for community values, especially proud and happy to pool their means and their labor and their knowledge to improve their farms and community standards; yes and often to lift up the "lost" farmer who happens by, down and out . . . For two years I have watched this regeneration of a "lost" farm family, by friendliness, in a small-farm area of the East. The results are something to lift up the heart to the high places. Let us suppose, as we ponder the so-called "migrant" problem, that the farmers of the country were given the chance, the privilege, of reclaiming lost farm families along with lost farm land—say three families to a farmer group, a soil conservation district for example . . .

*The Land* has much to say, pictorially, and dramatically, about giant machines on the land, felling

trees, picking more cotton in 20 minutes than a man can pick in two days, harvesting corn and even carrots, stripping the plains of cover; and about great ships with cargoes of wheat from our plains and sheep from our ranges, setting sail for other lands needing bread and mutton. This part of *The Land* works "contrariwise" with other parts, for here the tremendous productive capacity of our country is emphasized—and one has the fleeting thought, as the picture grinds on, that this film would drive Hitler crazy—crazier. He would no doubt order his best agents to find out at once—or else—what it is the Americans use in place of soil!

The purpose of this documentary film is of course, to show what can happen to the land—what has happened to our land and our people—once human beings start digging and keep on digging for 2 centuries, with ever larger tools and ever more human beings, without definite plans to conserve the soil and human resources. *The Land* does tell this story, as regards our country, most effectively by means of some truly magnificent photography, a commentary so simple and moving as to be powerful, and music flowing along like a river. When, near the end of the film, the new pattern of land use—soil conservation—is introduced, the contrast is so striking that it almost approaches the melodramatic. Rich moist soils, properly worked; contour cultivation, and forests guarding the slopes; clover, lime, health; farmers talking it over, a new shining light on their faces; giant machines under control on the land; snug, happy homes amid lush green pastures. . . .

The mental reaction is tremendous, here at the end of *The Land*. What a difference soil conservation makes—the land made strong again—the light in the peoples' faces.

#### HELPS ARMY HOLD LAND

(Continued from p. 29)

ton, Spokane, Wash., now at Salt Lake City; Walter Kell, Lincoln, Nebr., now at Omaha; Sid Parish, Lima, Ohio, now at Columbus; and E. C. Murdoch, Upper Darby, Pa., now at Baltimore.

Two of these men have been commissioned. The others are being transferred to Army pay rolls effective July 1, 1942 for the duration. Doctor Bennett is anxious that they be given all possible assistance by Service technicians in carrying out their assignment. The Army's job of turning out millions of fighting men is a tough one, and if the Service can assist by handling erosion and revegetation problems, we are not only saving soil but helping the Army officials by allowing them to devote more time to training the fighters who will protect our soil.

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Compiled by ETTA G. ROGERS, Publications Unit

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Cassidy's field had about the same slope as ours. It had cotton on it that year and the rows were run up and down the hill. Between each row there was a little stream of water. You could see the streams all the way up the hill when the lightning flashed. Lower down and near the fence where we were, some of them had joined together to form bigger streams. I noticed that the little streams ran around the rows, but when they had joined they cut across and washed out the whole row. Some of the stalks of cotton, though they were knee-high, were washed out completely. All these combinations of streams headed for the lower side, where there was a gully.

"Now, let's follow the water," said the old man. We were soaked, but he didn't seem to know it was raining at all. We climbed the fence and followed the biggest stream that flowed from Cassidy's land a few hundred yards, and the gully got bigger all the time. There was a slope this far, but then the land began to flatten out, and a little farther on was almost level.

The gully got shallow and the water was spreading out all over the flat place. "Tomorrow if this keeps up there will be a layer of sand and clay all over the flat. You are seeing poor land being made poorer. Now let's go back and look at our field."

There was a good deal of water coming through the gully which ran up the draw. But there were dams to slow it down and by the time it reached the lower side only a little trickled through the rock wall by the fence. Little or none was running off the broken ground. It seemed to soak in instead.

Well, the old man stood there several minutes staring at those fields. When he looked at ours he seemed pleased, but when he looked at the deepening little gullies in between Mr. Cassidy's stunted cotton rows he got angry.

"These improvident farmers are ruining the land. Yes, ruining it world without end. The whole country is going to rack and ruin. The foundation of civilization is being undermined. There will come a time when conservation will be popular but it will be too late. When the farmers are pauperized this nation will face ruin."

From  
**OLD McDONALD**  
**HAD A**  
**FARM**

by  
**Angus McDonald**

